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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,017	01/25/2002	Mohammed Mali	335-2US	7530

20212 7590 06/17/2003

THOMPSON LAMBERT
SUITE 703D, CRYSTAL PARK TWO
2121 CRYSTAL DRIVE
ARLINGTON, VA 22202

EXAMINER

JONES, JUDSON

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,017

Applicant(s)

MALI, MOHAMMED

Examiner

Judson H Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-12 is/are allowed.
- 6) ☒ Claim(s) 1,3,13 and 14 is/are rejected.
- 7) ☐ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Zhang 6,326,706 B1.

Zhang discloses an engine with a tubular housing 25, first and second coils 40, 40' around the housing, a piston 50, a drive circuit for sequentially energizing the coils to move the piston, and first and second magnetic sleeves (the bottom part of elements 42, 42') with non-magnetic material 24, 25 between the two magnetic sleeves.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of McNeil 3,287,616 A. Zhang discloses an engine with first and second coils only. McNeil teaches in figure 1 that more coils can be added to produce a longer stroke. Since McNeil and Zhang are from the same field of endeavor it would have been obvious at the time the invention was made

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for one of ordinary skill in the art to have utilized a third coil with an associated third magnetic sleeve in order to increase the stroke of the device.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang in view of Yamamoto et al. 6,184,597 B1. Zhang discloses the engine with the tubular housing and magnetic sleeve but does not disclose the material used for the sleeve. In column 6 lines 12-24 Zhang discloses that element 42 is a pole piece and that it is a part of the magnetic linkage between electromagnet and the shuttle magnet. Yamamoto et al. teaches in column 7 lines 33-37 that the pole portions are part of the yoke and teaches in column 7 lines 49-56 that the yokes are made from steel sheets. In column 13 lines 3-10 Yamamoto et al. teaches using ceramic to hold yokes together because ceramic has high resistance, low magnetic permeability and low weight. Since Yamamoto et al. and Zhang are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized steel for pole portions for the purpose of increasing the power of the motor by high magnetic permeable steel of the flux path and it also would have been obvious to utilize ceramic for the non-magnetic portions of the motor for the purpose of reducing stray flux loss and reducing the weight of the device.

Allowable Subject Matter

Claims 4-12 are allowed.

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or teach an engine having a piston in a tubular housing with coils wound around the housing where first and second magnetic sleeves form a part of the housing and where the first and second magnetic sleeves are separated by non-magnetic material as recited in claim 2. The prior art of record does not disclose or teach an engine having a piston in a tubular housing where the piston has first and second bearings extending circumferentially around the piston and where the piston has a reduced diameter between the bearings to define a lubricating sump as recited in claim 4. The prior art of record does not disclose or teach an engine having a piston in a tubular housing where the housing is formed from alternating sections of magnetic material and non-magnetic material with coils placed over corresponding sections of magnetic material as recited in claim 9.

Any inquiry concerning this communication from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ

June 12, 2003

